The Canadian Entomologist

VOL. LIX. ORILLIA, DECEMBER, 1927. No. 12.

NOTES ON AN ENTOMOLOGICAL ENIGMA.

BY G. F. FERRIS,

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It is now more than twenty years since H. S. Barber[1] recorded and described a most peculiar insect larva that had been taken from beneath the dead leaves of tree Yucca at Hesperia, on the Mojave Desert in San Bernardino County, California. It may be recalled that specimens of this larva were taken to Washington, where one of them remained alive without taking food for a period of twenty six months. The species was once more recorded by Couden[2] who reported finding a single specimen in old alcoholic material that had been received from D. W. Coquillett at San Bernardino in 1892.

This larva is a most peculiar thing as a reference to the accompanying figure will show, so peculiar in fact that its relationships have always been in doubt. Barber believed that it belonged in or near the Lampyridae and in a letter to the present writer under the date of Dec. 14, 1921, reasserted this belief and reinforces it with the opinions of Dr. A. G. Böving who would assign it to the Telephoridae. Barber suggests also, in this same letter the possibility that it may actually be the larva of a certain aberrant species referred by Van Dyke to the genus *Ginglymocladus* and placed by the latter in the Lampyridae.

So the matter now stands, for no one has ever reared the adult of this peculiar larva, nor, as far as I am aware, has anyone ever recorded it again. It remains an entomological mystery.

I long ago became familiar with the literature dealing with this larva and had cherished hopes of some day gaining more information concerning it. But on various trips into the general region of the desert country from which it had originally come I was unable to find it. Then in 1921, Mr. J. C. Chamberlin, returning from an expedition to the islands and the shores of the Gulf of California brought with him a specimen of this larva. He had found them in some abundance under the loose bark of mesquite trees at Angles Bay, and his curiosity being aroused by the strange appearance of the larva had collected one of them merely to secure an identification.

Again in 1923, Profession Vasco M. Tanner, then of St. George, Utah, found a single specimen beneath the dead leaves of Yucca at that place, but diligent search produced no more. Again it was collected simply as an object of curiosity.

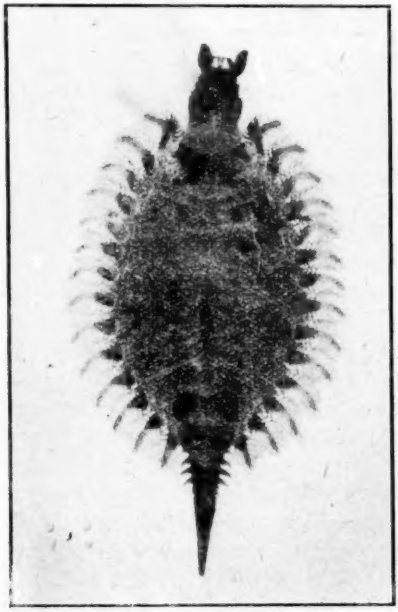
And still a third time it appeared. Mr. Fred Klyver, a graduate student of Stanford University, while engaged in ecological field work in the foothills of the Sierras near Fresno, California stumbled upon certain strange larvae which he collected out of curiosity as to their identity.

But this third collection aroused hopes that something more might be learned for Mr. Klyver informed me that the insects occurred in some abundance

1. Proc. Ent. Soc. Wash. 7: 117-121; figs. 11-14. (1905).
2. Proc. Ent. Soc. Wash. 10: 14. (1908).

and as he was returning to the same region for further work he offered to guide me to the place. So, accompanied by Mr. Klyver and by Mr. Emery Myers, another graduate student, I visited the place on May 23, 1927.

In all the other cases these larvae had been taken in connection with vegetation, but here the situation was very different. The foothills of the Sierras are here capped in places by an ancient volcanic deposit of lava and ash. Beneath these deposits are the still unconsolidated auriferous gravels and at one point in the hills near the little village of Friant there is a conspicuous outcrop of white rock, formed from volcanic ash and immediately overlying the gravels. Small over-hanging cliffs are formed and beneath these, in the cracks of the rock, are these larvae.



An entomological enigma. (From Photograph by Prof. E. O. Essig).

Although the larvae, from all previous records, might be assumed to inhabit extremely dry places, they here sought the damper recesses where the rock was still wet enough to support a growth of some one-celled green alga. In the dryer portions almost none could be found.

It had been my hope to find some evidence of an adult insect that might be associated with the larvae, but nothing of the sort appeared. The crevices were evidently utilized as places of hibernation by many kinds of insects and their remains were numerous, including especially beetle elytra representing several species. But there was nothing which gave any ground for even the most remote suspicion that any of these could be connected with the larvae.

As for the larvae themselves. They are most mystifying things. Their appearance, which has attracted the curiosity of every collector, is usually likened to that of a very minute tortoise. They sit motionless on the rocks, and even when disturbed their only reaction is to lift their "tails." When they do move about the motion is so slow as to be almost imperceptible. They are strongly thigmotactic and they seem not to be finally content unless their backs are touching something.

While the mouthparts are of a character which indicates a predaceous habit, their slow movements would seem to handicap them most seriously. Nevertheless, I saw one with a very small spider in its jaws and another with a minute Hymenopteron. In both cases the prey was held up in the air much after the manner of an ant lion.

There were present larvae in many stages, ranging from some that were but little more than a millimeter long to others which were eleven millimeters over all. In all the stages the appearance is much the same, except that the smallest are pale yellow while the larger specimens are dark brown.

Many shed skins were present and a few live specimens were found singly within a rough net that partially enclosed them. I am not entirely convinced that this net is made by these insects, although Mr. Meyers was satisfied that they are responsible for it. It might have been made by some other insect and the occurrence of these larvae within it might be entirely fortuitous. If not accidental, the net probably represents a vestigial molting cocoon. It is composed of a single layer of coarse threads, crossing each other to form a net work and fused at the points of intersections.

Beyond this an extended examination of the locality revealed no further information. Nearly a hundred of the larvae were collected alive with a view to an attempt to rear them to maturity. With the information available that they seem to feed on almost any sort of small insect and that they require a certain amount of moisture it may be possible to get some results.

And so I have devised a breeding cage of a simple type that may possibly meet the necessary conditions. Within this the insects sit—motionless. Unless they do something more than that they are likely still to remain an enigma.

NEW TRANSITION FORMS (LEPID., RHOPALOCERA).

BY J. D. GUNDER,
Pasadena, Calif.

(Plates A & B)

The half-tone illustrations of the butterfly transition forms, herein described, vary somewhat in size from the actual specimens; therefore, a reference to their wing expanse, as given in the text is advisable. The classification of these specimens follows that outlined in the November, 1927, Entom. News (Philadephia) and which was first suggested in that publication.

1. **Plebeius melissa** (Edw.), tr. f. **inyoensis** f. tr. nov.

Upper side: unchanged. Under side: submarginal rows of black spots on both wings joined through their interspaces forming bar-shaped maculations; basal area spotting slightly elongated. Fig. za illustrates typical under side *melissa*.

Classification: transition form; melanifusism—a well developed phase.

Data: Holotype ♂, expanse 24 mm.; Olancha, Inyo Co., Calif. (G. A. Malcolm), July 2, 1925. In Author's coll.

2. **Glaucopsyche xerces** (Bdv.), form **mertila** (Edw.), tr. f. **barnesi** f. tr. nov.

Male. Upper side: unchanged. Under side: lacking all black centered spots on both wings, except for remains of 3 or 4 whitish spots on center primaries; discal cell spots same size, but all white, lacking centre bar; brown ground color and bluish bases as usual. Female (Fig. 2a). Same as male, except the immaculation of this specimen is not so far advanced, i.e. row of remaining spots somewhat black centered and cell spots retain the black bar. Fig. 2b shows a typical under side *mertila*.

Classification: transition form; immaculism—nearly final stage.

Data: Holotype ♂ (fig. 2), expanse 28 mm.; San Francisco, Calif., April, 1923. In the Barnes coll. Allotype ♀ (fig. 2a), expanse 29 mm.; San Francisco, no date. Also in Barnes coll.

3. **Plebeius saepiolus** (Bdv.), tr. f. **leussleri** f. tr. nov.

Upper side: unchanged. Under side: row of round, white circled, black spots elongated pointedly inward, more noticeably on secondaries. Fig. 3a shows a typical female *saepiolus*.

Classification: transition form; melanifusism—a prime phase only, but interesting as showing the tendencies of this rather constant species.

Data: Holotype ♀, expanse 27 mm.; Cassell's, Park Co., Neb., Alt. 8500, Aug. 23, '18. Named after Mr. R. A. Leussler of Omaha, Neb. in whose collection it remains.

4. **Glaucopsyche lygdamus** (Dbldy.), race **couperi** Grt. tr. f. **mcdunnoughi** f. tr. nov.

Male (fig. 4). Upper side unchanged as shown by fig. 4a. Under side: immaculate of all usual spotting; bar shaped cell spots as usual. Fig. 4b shows the under side of a typical Barnes coll. specimen from same data & locality, but the ground color of this specimen has photographed darker than fig. 4, however in reality they are the same shade. Female (fig. 4c). Immaculate as the male. Fig. 4d shows the upper side of this female.

Classification: transition form; immaculism—a final degree.

Data: Holotype, ♂ (fig. 4 & 4a), expanse 31 mm.; Sask., Can. (Crocker), no date. In Barnes coll. Allotype ♀ (fig. 4c & 4d), expanse 29 mm.; Calgary, Can. (Willing), June 26, 1894. In Canadian Nat.-Coll. at Ottawa. I take pleasure in naming these deserving specimens after Dr. J. McDunnough of Ottawa, Canada.

Note: *Couperi* Grt. was described from Anticosti material. Should Saskatchewan specimens eventually prove to be a different species or race thereof, then the name *afra* Edw. is available for them and the above described tr. f. can be used under this Edwards name because of this notation.

5. **Philotes glaucon** (Edw.), race **intermedia** B. & McD., tr. f. **malcolmi** f. tr. nov.

Upper side: typical. Under side: secondaries—lacking all round black

spots through discal and basal areas with inner row of marginal lunate spots emphasized; primaries—nearly immaculate as secondaries except for several remaining spots opposite cell which itself is as usual. Fig. 5a shows under side of a typical *intermedia* Barnes & McDunnough.

Classification: transition form; immaculism—nearly a final grade.

Data: Holotype ♂, expanse 26 mm.; Amer. River, Placer Co., Calif. (Malcolm), July 19, 1921. In Author's coll. Named after Mr. G. A. Malcolm, Jr. of Los Angeles.

6. **Satyrium fuliginosa** (Edw.), tr. f. **immaculata** f. tr. nov.

Upper side: as usual. Under side: lacking all spotting except for traces near all outer margins. Fig. 6a illustrates a typical well marked ♀. Most illustrations heretofore have shown rubbed or poorly conditioned specimens, so that it has been difficult to tell just what markings there were. In Northern Calif. specimens, the spots are blurred or indefinite, they are hardly worthy of a racial name however. I have examined types of *fuliginosa* Edw. at Pittsburg and types of synonym *suasa* Bdv. now in the Barnes coll.; they are all well marked though worn.

Classification: transition form; immaculism—about final phase.

Data: Holotype ♀, expanse 29 mm.; McGee's Creek on highway, nr. Mammoth, Mono Co., Calif., June 20, 1926. In Author's coll.

7. **Everes amyntula** (Bdv.), tr. f. **dodgei** f. tr. nov.

Upper side: as usual. Under side: inner row of conspicious black spots elongated inwardly losing all trace of their white circling, those on secondaries near costal margin having longest extension, especially that of interspace below subcostal vein Fig. 7a shows a typical Santa Cruz specimen. The illustrations of both these specimens on the plate are entirely too much enlarged however.

Classification: transition form; melanifusism—probably more nearly a final phase than is suspected.

Data: Holotype ♂, expanse 30 mm.; Santa Cruz, Calif. (Dodge), Apr. 20, 1918. In Author's coll. Named after friend E. A. Dodge of Santa Cruz.

8. **Glaucopsyche lygdamus** (Dbldy.), race **oro** (Scud.), tr. f. **leussleri** f. tr. nov.

Upper side: unchanged. Under side: lacking all spotting of secondaries, with those on primaries slightly reduced in size, especially those nearer costal margin being very small or absent. Fig. 8a shows a typical ♂ *oro* from same place and date.

Classification: transition form; immaculism—semi-final phase.

Data: Holotype ♂, expanse 29 mm.; Harrisburg, Banner Co., Neb. (Leussler), Aug. 23, 1918. In the Leussler coll. and named after that gentleman.

9. **Strymon melinus** Hbn., tr. f. **meinersi** f. tr. nov.

Similar to all typical specimens except that all red color here becomes a perfect yellow. This color change is noticeable near the tail spots on both upper and under sides of the secondaries. The sex of this specimen is correctly determined. Fig. 9a shows its under side.

Classification: transition form; chromatism—red to yellow color change.

Data: Holotype ♀, expanse 27 mm.; Table Rock, North Carolina (Mein-

ers), Aug. 18, 1922. In Author's coll. Named after Dr. E. P. Meiners of St. Louis, Mo.

10. **Everes comyntas** (Godt.), race **herrii** (Grin.), tr. f. **arizonensis** f. tr. nov.

Upper side: unchanged. Under side: inner lunate edge of marginal row of spots joined through their interspace with the submarginal row of black centered spots forming a row of black bars across the wings on both primaries and secondaries; basal area of secondaries also has the spots slightly elongated. Half-fig. 10 shows the under side of a ♂ *herrii* labelled—Cochala Co., Ariz., July, 1899, which is in the Herr Collection at the Los Angeles Museum. Mr. C. W. Herr tells me it is one of the types. I consider this Arizona & New Mexico race of *comyntas*, a worthy one and correctly placed under the Eastern species.

Classification: transition form; melanifusism—final degree.

Data: Holotype ♂, expanse 23 mm.; Santa Rita Mts., Ariz. (Clemence), Apr. 18, '10. In Los Angeles Museum Coll.

11. **Everes comyntas** (Godt.), race **herrii** (Grin.), tr. f. **jemezensis** f. tr. nov.

Upper side: typical. Under side: lacking row of black centered spots on both wings, however, a trace of these remains on the primaries which is hardly distinguishable; the inner lunate edge of the marginal spots is greatly emphasized with the design of the spots themselves suppressed. For comparison with a typical under side *herrii*, see half. fig. 10.

Classification: transition form; immaculism—nearly final.

Data: Holotype ♀, expanse 25 mm.; Jemez Spr., N. Mex. (Woodgate), May 13, 1913. In Coll. of the Acad. of Sciences, Philadelphia and placed there through the courtesy of Mr. R. C. Williams, Jr.

12. **Lycaena** (Heodes) **snowi** (Edw.), tr. f. **mcdunnoughi** f. tr. nov.

Similar to tr. f. *maculinita* Gun. of *Lyc. cupreus* Edw. in having the black spots fused inwardly through their interspaces and more noticeably on the primaries; the under sides remain unchanged. Fig. 12a shows one of the Edwards types of *snowi*.

Classification: transition form; melanifusism—fairly well marked.

Data: Holotype ♀, expanse 32 mm.; Laggan, Alta, Can. (F. H. W. Dod), July 20, '04. In Canadian Nat. Coll. at Ottawa. Two ♀ paratypes (fairly well marked) also in same collection labelled—July 20, 1904 (Dod) and the other taken by Mr. T. E. Bean.

13. **Lycaena** (Heodes) **dione** (Scud.), tr. f. **gibboni** f. tr. nov.

Upper side: typical. Under side. Primaries: minute outer row of spots at margin absent; next inner row joined heavily through the interspaces with the principal row of round black spots forming a thick black series of bars across the wing; discal & basal area spotting as usual. Secondaries: only spots adjacent entire costal margin affected. Fig. 13a is typical and shown for comparison.

Classification: transition form; melanifusism—primaries final, secondaries undeveloped.

Data: Holotype ♂, expanse 38 mm.; Miniota, Man., Can. (Gibbon), July 4th. To be deposited in the Canadian Nat. Coll. at Ottawa. I am pleased to name this interesting tr. f. after Mr. Hugh A. Gibbon of Miniota.

14. **Lycaena** (Heodes) **helloides** (Bdv.), tr. f. **williamsi** f. tr. nov.

Male. Upperside (fig. 14); lacking usual partial row of spots through discal area on primaries; corresponding row on secondaries fused inward toward cell forming series of dark streaks. Fig. 14a shows a typical ♂ upperside. Under side (Fig. 14b); all submarginal rows of spots joined through their interspaces forming a row of streaks on both wings varying in size and thickness according to the spots they represented. Fig. 14c represents a typical ♂ under side. Female (fig. 14d). Upper side; submarginal row of spots pointedly streaked inward. Fig. 14e shows an upper side ♀ for comparison. The under side of the ♀ is as usual.

Classification: transition form; melanifusism—probably final phase.

Data: Holotype ♂, expanse 27 mm.; Hall's Valley, Park Co., Colo. August. Placed through the courtesy of Mr. R. C. Williams in the Academy Coll. at Philadelphia. Allotype ♀, expanse 28 mm.; Chicago, Ill., May 30, 1897. Placed through the courtesy of Mr. Alex Wyatt of Chicago in the Academy Coll. at Phil. I am pleased to give Mr. R. C. Williams, Jr's name to this fine tr. form.

15. **Lycaena** (Heodes) **thoe** (Guer.), tr. f. **sternitzkyi** f. tr. nov.

Entirely like typical Calif. specimen except that all red color here becomes a distinct yellow. This is very noticable on the secondaries. Compare fig. 15 with fig. 14a.

Classification: transition form; chromatism—color change red to yellow.

Data: Holotype ♂, expanse 27 mm.; Petaluma, Calif. (Sternitzky), Aug. 1, 1927. In Author's Coll. Named for our Entomological artist—Mr. R. F. Sternitzky of San Francisco.

16. **Lycaena** (Heodes) **thoe** (Guer.), tr. f. **wyatti** f. tr. nov.

Male. Upper side (fig. 16); submarginal row of spots fused inward through their interspaces to cell on secondaries with primaries as usual. Fig. 16a shows a regular ♂ upper side. Under side; minute outer row of spots at margin of primaries absent; next inner row on both wings joined through interspaces with the principle round row of black spots forming a complete series of bars across both wings, those along costal margin of secondaries being longest; all other inner-half spotting as usual as show by fig. 16b. Fig. 16c shows a typical ♂ under side. Female (fig. 16d). Under side; as usual. Upper side; as shown, has the inner spotting fused pointedly inward, more so on the primaries and similar to *helloides* ♀ (fig. 14d).

Classification: transition form; melanifusism—final phase, especially ♂.

Data: Holotype ♂, expanse 33 mm.; Colorado? no date. In Strecker Coll., Field Museum, Chicago. Allotype ♀, expanse 36 mm.; Chicago, Ill. (Wyatt), Sept. 15, 1907. To be deposited by Mr. Wyatt in the Field Museum Coll. 1 ♂ paratype in Leussler Coll. at Omaha, Neb. labelled—June 9, 1918, Omaha. 1 ♀ paratype in A. Herz Coll., Chicago, labelled—June 20, 1918, Chicago. I take a good deal of pleasure in naming these fine specimens after my old Chicago friend, Mr. Alex Wyatt.

17. **Oeneis uhleri** (Reak.), race **varuna** (Edw.), tr. f. **dennisi** f. tr. nov.

Mr. W. H. Edwards in his text regarding *varuna* refers at length to the number of spots or eyelets occuring on various specimens coming under his ob-

servation. None of his types or others referred to are entirely without spots on both primaries and secondaries and on both surfaces as is this specimen which is illustrated by fig. 17 upper side and fig. 17b under side. Figures 17a and 17c show typical *varuna* type ♂ photographed from his book.

Classification: transition form; immaculism—final degree.

Data: Holotype ♂, expanse 40 mm.; Beulah, Man., Can. (Dennis), May 17, 1904. Named after Mr. A. J. Dennis of Beulah who, I hope, will deposit this type with the National Coll. at Ottawa.

18. **Aglais milberti** Godt., tr. f. **rothkei** f. tr. nov.

This interesting tr. f. shows the same general tendencies of those occuring in neighboring genera such as *Poly. satyrus marsyas*, tr. f. *hollandi* or *Van. cardui*, tr. f. *ate* and others, in which, on the upper side of the primaries, there is black design radiation outward from the cell towards the apex along the costal margin and also white streaking of such spots as occur in the apical areas. The upper side secondaries of this specimen has the black of the basal and discal areas extending out over the colored band and nearly obliterating it, especially nearer the costal margin. The bluish spots at the outer margin are blurred and slightly elongated. Fig. 18 is rather poor as the red color does not photograph well. Fig. 18b shows the under side in which the bands and lines are indistinct or lacking. Figs. 18a & 18c illustrates a typical ♂ for comparison.

Classification: transition form; (for the time being, I place this under melanifusism—with probably final degree).

Data: Holotype ♂, expanse 40 mm.; Scranton, Pa. (Rothke), July 21, 1915. In Author's coll. Named after Mr. Max Rothke of Scranton, Pa.

19. **Argynnis montivaga** (Behr.), race **malcolmi** Comst., tr. f. **sineargentatus** f. tr. nov.

Entirely similar in design to typical *malcolmi*, but lacking all silvering of spots, in place of which there is a lighter shade of ground color. This specimen also has less red shading which causes it to be lighter when compared with a typical specimen, as shown by fig. 29a.

Classification: transition form, pellucidism—lacking silvering or iridescence.

Data: Holotype ♂, expanse 59 mm.; Mammoth, Mono Co., Calif., Aug. 7, 1922. In Author's coll.

20. **Argynnis idalia** Dru., tr. f. **dolli** f. tr. nov.

The ground color of both surfaces of this specimen on both wings is cream-white instead of usual reddish as shown by figs. 20 & 20b as compared to a typical specimen such as figured by No. 20a. This specimen is not faded or de-colored.

Classification: transition form; chromatism—color change red to yellow.

Data: Holotype ♀, expanse 94 mm.; Richmond Hill, Long Island, N.Y. (Doll), July 15, 1886. In Coll. Brooklyn Museum, Brooklyn, N.Y. Named for Mr. Jacob Doll.

21. **Argynnis lais** Edw., tr. f. **dennisi** f. tr. nov.

This specimen is only a moderately developed phase. The upper side as shown by fig. 21 is typical. Its under side (fig. 21a) has a concentration of the silver spots of the basal area into three drop-shaped marks fitting into the extreme base, which may be compared with typical *lais*, fig. 21b.

Classification: transition form; melanifusism—(streaking of hind wing silver spots at base of secondaries usually forecasts melanifusism in *Argynnis*, so I place this under that classification).

Data: Holotype ♂, expanse 45 mm.; Beulah, Man., Can. (Dennis), June 28, 1910. To be placed in the National Coll. at Ottawa by Mr. A. J. Dennis of Beulah for whom it is named.

22. **Argynnis mormonia** Bdv., tr. f. **benjamini** f. tr. nov.

Upper side of both primaries & secondaries largely fused over with black obliterating the usual rows of spots, lines & streaks. This darkness is more dense through the interspaces of the discal & basal areas. The innermost cell mark on the primaries retains its shape and color. The under side of the primaries are like their upper sides, while the secondaries are not so much fused over with blackness except the outer half, the inner half being fairly typical, with the usual silvering in evidence. Figs 22 and 22a illustrate this tr. f., while fig. 22b shows a regular *mormonia* according to Benjamin who had access to the type.

Classification: transition form; melanifusism—practically final.

Data: Holotype ♂, expanse 50 mm.; Arangie, Idaho, no date. In Barnes Coll. and named after our well known entomological worker, Mr. F. H. Benjamin.

23. **Argynnis eurynome** Edw., tr. f. **brucei** f. tr. nov.

Both primaries and secondaries on the upper sides well clouded over with dark fusion, except in the regions of the cells which retain spots of the original ground color. The under side primaries are well fused, while the secondaries are fairly typical, only the veins on the outer half showing black fusion, and silver much in evidence. Figs. 23 & 23a show this specimen, while fig. 23b shows species *eurynome*.

Classification: transition form; melanifusism—nearly final.

Data: Holotype ♀, expanse 50 mm.; Colorado (D. Bruce), 1890. In Strecker Coll., Field Museum, Chicago and named after that energetic collector, Mr. Bruce.

24. **Argynnis nevadensis** Edw., race **meadii** Edw., tr. f. **gerhardi** f. tr. nov.

The entire upper surface of this specimen is mottled over by black design fusion, but allowing enough of the former designs to peek through to show their general outlines. The under side primaries show black fusion of discal area spots, while the secondaries are about as usual, the spots of silver being slightly elongated. The usual green of *meadii* is well preserved. Fig. 24b illustrates Edwards type ♂.

Classification: transition form; melanifusism: well developed.

Data: Holotype ♂, expanse 51 mm.; Colorado (D. Bruce), no date. In the Strecker Coll., Field Museum, Chicago and named after Mr. Wm. J. Gerhard of that City.

TWO NEW NORTH AMERICAN GENERA OF THE TRIBE EUPARIINI (COLEOPTERA).*

BY W. J. BROWN,

Ottawa, Ont.

Euparixia n. gen.

Maxillary lobes membranous. Mandible with molar corneous, lacinia membranous.

Head wide, strongly deflexed. Front not tuberculate or carinate. Eyes hidden in repose. Clypeus apparently broadly emarginate when viewed from above; in reality not emarginate, the apex being bent ventrad and caudad, this inflexed portion short and limited above by a fine carina.

Prothorax very deeply emarginate in front, suddenly constricted one-fourth from the base; basal margin strongly arcuate; basal angles obliterated; sides explanate, the margins angulate one-third from apex, disk with transverse impressions. Scutellum very small.

Elytra much narrower than the prothorax at base, widened posteriorly. Humeri dentate, not produced. Intervals cariniform. Sides of elytra embracing the body. Epipleurae broad at base, gradually narrowed posteriorly, extending to apices of elytra. Wings functional.

Mesosternal process between the coxae wide, finely and feebly carinate. Side pieces of meso- and mestasternum and external tip of middle coxae covered by the epipleurae.

Front femur very wide; front trochanter large, extending beyond the femur; front tibia tridentate externally. Middle femur rather strongly arcuate, hind femur feebly so, both slender. Middle and hind tibiae not arcuate, without traces of transverse carinae, gradually and very feebly enlarged to apex, the outer apical angle of each not produced. Tarsi slender, the segments cylindrical, the claws very small.

Euparixia duncani n. sp.

Length 5.3 mm. Rather pale reddish brown throughout; very feebly shining. Head convex; coarsely and densely punctate on basal half; apical half impunctate, rather closely granulate, the granules very feeble; frontal suture not visible. Clypeal margin apparently broadly and very feebly emarginate; the angle on each side very obtuse; the margin oblique almost to gena; a feeble incisure at end of frontal suture. Genae rectangular, prominent.

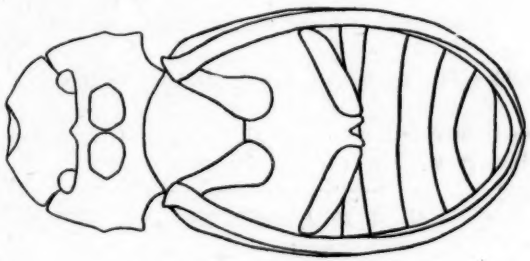
Pronotum about three-fourths as long as wide; moderately convex; front angles broadly rounded; side margins more broadly explanate anteriorly, more strongly so posteriorly, diverging obliquely to apical third, then converging to the constriction, the angles thus formed very obtuse; angles formed by the constriction rectangular and very prominent. Explanate pronotal sides impunctate; the disk coarsely punctate throughout, the punctures cribrate and unequal, becoming less coarse and close near the apex; the transverse impression on each side short, broad, shallow, and oblique; base without marginal line.

Elytra widest about one-third from apex, gradually narrowed to base, the sides feebly arcuate; sides strongly arcuate in apical third. Intervals slightly

*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.

narrower than the striae, evenly elevated; the summit of each with a single row of very small, pale setae. Striae each with a single row of coarse, deep, close punctures.

Mesosternum coarsely punctured near anterior margin, elsewhere impunctate. Metasternum with rather coarse, not close punctures on the sides, a depressed area along hind margin impunctate, the median line impunctate and narrowly sulcate. Abdominal segments each with a row of very coarse and close punctures on anterior margin, elsewhere coarsely, rather closely punctate; the penultimate segment narrowed at middle, the apical segment strongly depressed anteriorly. Middle and hind femora punctate, the punctures moderately fine and close, the former with an entire marginal groove, the marginal groove of the latter extending half to base.



Euparixia duncani, ventral aspect.

Anterior femur and trochanter very coarsely and closely punctate on their posterior faces; the tibia with a few indistinct punctures on the anterior face, not crenate on external margin, the spur slender; first segment of the tarsus as long as the two following together. Hind tarsus about two-thirds as long as its tibia, the first segment much longer than the longer spur and subequal in length to the three following.

Holotype—Globe, Ariz., August 11, 1925, at light, (D. K. Duncan), No. 2585 in the Canadian National Collection, Ottawa.

Paratype—Same data, August 18, 1926.

Euparixia is allied to the African genus *Odontolochus* Schmidt and to *Euparia* Serville. With the former, Euparixia agrees in possessing an inflexed clypeal margin and angulate pronotal margins. On the other hand, *Odontolochus* lacks the explanate pronotal margins and the basal thoracic constriction. The hind tibia of *Odontolochus* is described as resembling that of *Ataenius* in which the outer apical angle is spiniform; in *Euparixia* this angle is not produced. *Euparixia* traces to *Euparia* in Horn's key to the North American genera of the Aphodiinae (Trans. Am. Ent. Soc. III, 294) but differs in the form of the clypeus, thorax, elytra, and hind tibia.

Euparixia duncani is the only species of the Aphodiinae known to the author in which all the side pieces of the meso- and metasternum and the external tips of the middle coxae are covered by the epipleurae. It is the only North American species having the clypeal margin inflexed. Its general form is very characteristic.

Pseudataenius n. gen.

Type—Ataenius socialis Horn.

The generic relationships of *P. socialis* (Horn) have been adequately diagnosed by Harold (Berl. Ent. Zeit., 1874, 174-175) and by Horn. (Trans. Am. Ent. Soc., XIV, 76-77). *Pseudataenius* is distinguished from its closest allies by its remarkable sexual characters; its elongate middle and hind tarsi, which are one-third longer than their respective tibiae; and by its elongate maxillary palpi.

Horn's description of *socialis* is somewhat inaccurate in several respects. In both sexes, the intercoxal process of the mesosternum is very feebly, but visibly, carinate, and the middle and hind tibiae are each supplied with a small accessory spinule. In the male, the middle tibiae are without traces of transverse carinae; in the female, these tibiae each show very feeble traces of two carinae. The anterior tibia of the male is sometimes tridentate, in which case the upper tooth is very small.

The mandibles and maxillary lobes are similar to those of *Ataenius* and *Euparixia.*

The author is indebted to Mr. E. T. Cresson, Jr. for comparing his material with the Horn types.

SOME NEW NORTH AMERICAN DIPTERA.*

BY C. HOWARD CURRAN,
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Descriptions of several new species of two-winged flies from North America are presented herewith and keys to several genera or well-defined groups are given. I am indebted to Dr. J. M. Aldrich of the United States National Museum for comparing considerable Tachinid material with the types in collections under his care and also for additional representatives of some of the new species.

PIPUNCULIDAE

Key to species of *Pipunculus* with appendiculate fourth vein.

1. Antennae long, acuminate ..... 2.
   Antennae short, obtuse below ..... 3.
2. Third antennal segment yellowish ..... 5.
   Third antennal segment brown, white pubescent (Vt., N.Y., Ont.) .... *appendiculatus* Cress.
   black median band (N.C., Va.) ..... *constrictus* Banks.
3. Humeri black; pile of thorax conspicuous, erect ..... 4.
   Humeri yellow; mesonotal pile short, appressed; femora at most with narrow
4. Metanotum gray pollinose; only apical segment of tarsi black .... *elegantulus* Will.
   Metanotum with a gray pollinose line above, elsewhere very thinly pollinose; apical four tarsal segments black or brown (Alta) ..... *stricklandi* n. sp.
5. Legs wholly yellow (Fla.) ..... *biscaynei* Cress.
   Femora largely black ..... 6.

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*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.

6. Scuttellum without hairs (Vt., Va.) ..... *brevis* Cress.
Scutellum with black and pale hairs on margin (B. C.) ..... *eronis* n. sp.

Pipunculus stricklandi n. sp.

Black, the legs partly yellow; third antennal segment sharply rounded below; femora spinose beneath. Length 5.5 mm.

Male. Face and front silvery gray, the eyes contiguous for half the distance above antennae; vertical triangle shining black; occiput gray pollinose, only very thinly so on upper half, the hair white. Antennae black; third segment brown, sparsely white pubescent, sharply rounded below, not at all produced.

Mesonotum moderately yellowish-brown pollinose, the broad borders with thin grayish pollen; humeri, notopleura and pleura, thickly cinereous pollinose. The metanotum bears a very thin coating of pollen, the upper margin alone bearing dense grayish pollen. Mesonotum and scutellum with rather long cinereous pile; propleura with long whitish hair.

Coxae and femora black, the bases and broad apices of the latter reddish yellow; tibiae and basal tarsal segment reddish yellow the tarsi elsewhere brown or black. Femora gray pollinose and white pilose behind, the hair on the legs black; femora with short, spinose bristles on apical half of both edges of lower surface, the posterior femora with a row of short black bristles along the middle of the apical half in front, their tibiae with four bristles at the middle in front; all the tibiae bear an elongate brown spot at the middle on the posterior half. Posterior tibiae silvery and white haired behind.

Wings with slight luteous tinge; stigma deep brown, entire; anterior crossvein situated slightly beyond tip of auxiliary vein, and hardly one-third the distance from base of discal cell; fourth costal section about one and a half as long as either of the two preceding sections. Squamae yellowish. Halteres brown, the stem partly reddish.

Abdomen shining black above, the sides broadly densely gray pollinose, the pollen triangularly produced on each segment posteriorly, on the fifth extending more than one-third across, the fifth segment almost one and a half as long as the fourth. Genitalia slightly inclined to right, laterally compressed, projecting a distance equal to half the length of fifth segment, with a narrowly oval apical cleft, the appendages reddish yellow. Hair sub-appressed, cinereous..

Type— ♂, Waterton, Alta., July 10, 1923, (E. H. Strickland), No. 2420 in the Canadian National Collection, Ottawa.

Pipunculus eronis n. sp.

Black, the third antennal segment, legs in part and ovipositor reddish yellow; third antennal segment long acuminate; femora spinose beneath. Length 4.5 mm.

Female. Head silvery pollinose the occiput grayish above, the very short hair white. Front widest at middle, the carina weak; a row of tiny hairs on either side of upper half; ocellar region shining black. Antennae black, the third segment with long white tip; arista shining black.

Thorax gray pollinose, the disc of the mesonotum yellowish brown; some fine white hairs on either side in front of wings; scutellum with a marginal row of pale hairs, brownish pollinose except the free border.

Coxae, femora and apical tarsal segment black; basis and apices of femora yellow; the posterior half of the anterior four and anterior surface of hind pair, silvery gray pollinose; tibiae silvery from basal view. Hair pale, short, the hairs on the pale portions arising from brown spots.

Wings cinereous hyaline; veins and stigma deep brown, the latter entire; anterior crossvein situated behind apex of auxilliary vein and before basal third of discal cell; posterior crossvein sinuate and with appendage at posterior third; fourth costal section one-fourth longer than either of the preceding sections. Squamae whitish. Halteres reddish, the knob brown apically.

Abdomen densely pale grayish pollinose, the second to fourth segments brown pollinose on median half, although the second shows some gray pollen on anterior half, the fifth and sixth segments with the basal third brown on median half and with a broad median brown vitta; on the anterior border of the intermediate segments the brown pollen projects strongly towards the sides. Hair sparse, not conspicuous, whitish. Piercer of ovipositor reddish yellow, longer than basal section.

Holotype—♀, Seton Lake, Lillooet, B. C., June 15, 1926, (J. McDunnough), No. 2421 in the Canadian National Collection, Ottawa.

CHLOROPIDAE

Botanobia salinaria n. sp.

Length 2 mm. *Male. Female.* Black, shining, the dorsum of the thorax and broad upper border of the pleura in front moderately brownish gray pollinose.

Head black, the front dull, the shining equilateral vertical triangle reaching but little more than half way to the antennae, with a broad pollinose stripe reaching from the vertex over the ocellar triangle where it is strongly produced laterally. Cheeks often brownish red on upper half, usually blackish brown. Palpi blackish. Antennae wholly black, the third segment rounded apically.

Hair of thorax black, short, not conspicuous; no punctate rows. Scutellum with two pairs of hairs in addition to the pair of strong bristles.

Legs black; apices of femora, broad bases and apices of tibiae and the basal three tarsal segments yellowish.

Wings hyaline; veins brown, second costal section not one and a half as long as third. Squamae brownish; halteres whitish with reddish stem.

Abdomen shining, the hair black.

The front bears an entire row of orbital hairs and two less distinct, anteriorly converging rows on the central part.

Type—♂, Smith's Cove, N. S., August 6, 1925 (A. Gibson), No. 2453 in the Canadian National Collection, Ottawa. Collected in salt marsh.

Allotype—♀, same data.

Paratypes—26 specimens of both sexes, same data.

Traces to *nitidissima* Meigen in available keys, but is at once distinguished by the short vertical triangle.

Botanobia ainsliei n. sp.

Length, 1.75 to 2 mm. *Female.* Shining black; front brownish red anteriorly; cheeks black, brownish or brownish yellow on upper half; palpi black.

Head black; front broadly brownish red anteriorly; face on more than

lower half and cheeks on upper half, dull brownish yellow; cheeks narrow. Vertical triangle large, reaching two-thirds the distance to the antennae; three strong orbital hairs on either side; ocellar triangle not pollinose; posterior orbits thinly brown pollinose, rather shining. Antennae wholly black, the third segment conspicuously flattened apically, large; arista pubescent.

Scutellum and metanotum very thinly grayish pollinose. Hair black, not conspicuous, six rows of hairs between the dorso-centrals; no punctate rows.

Legs black; narrow apices of femora and base of posterior tibiae reddish; broad apex of posterior tibiae, the anterior four wholly and the tarsi except the apical one or two segments yellow, the anterior four tibiae often with an obscure brown tinge towards the base.

Wings cinereous hyaline; veins brown; second costal section one-fourth longer than third. Squamae brownish. Halteres brown with white knob.

Abdomen shining black.

Holotype—♀, Olmsted Co., Minnesota, (C. N. Ainslie), No. 2454 in the Canadian National Collection, Ottawa.

Paratypes, 5 ♀, same data.

Traces to *nitidissima* Meigen in available keys from which it is distinguished by the much shorter vertical triangle, etc. Differs from *dissidens* Tucker in the wholly pale front legs and absence of punctate rows on the mesonotum.

CORDYLURIDAE

Amaurosoma Becker

Following is a key to the described Nearctic species with the exception of *acuticornis* Lw. which I cannot place from the description:

1. Propleura hairy ..... 2.
   Propleura bare ..... *nuda* Mall.
2. Wholly yellowish ..... *alberta* n. sp.
   Thorax and abdomen black ..... 3.
3. Front femora with only one or two outstanding antero-ventral bristles .... 4.
   Front femora with antero-ventral bristles occupying at least the basal half 5.
4. A single antero-ventral bristle situated near the base of the front femora ..... *unispinosa* Mall.
   Two antero-ventral bristles near middle of front femora ... *bispinosa* Mall.
5. Legs mostly black ..... *katmaiensis* Mall.
   Legs mostly yellow, front yellowish on anterior half ..... *pallidipes* Mall.

Amaurosoma alberta n. sp.

Reddish and reddish yellow, the upper genital segments brown. Length 7 mm.

Female. Front reddish; upper half of head yellowish pollinose the lower half whitish. Reclinate orbital weak, the upper divergent frontal only two-thirds as long as the anterior one which is scarcely stronger than the anterior group; parafrontals with a row of six or seven short hairs. Ocellars long; outer verticals half as long as verticals; hair on lower half of occiput and bristles along oral margin, yellow. Third antennal segment slightly stained with brown; arista mostly black, obscurely pubescent.

Thorax ochreous pollinose; pleural hair pale; dorsocentrals, 2-3. Metanotum black in ground color.

Anterior femora without antero-ventral bristles.

Wings cinereous hyaline, with luteous tinge anteriorly. Squamae yellowish. Halteres reddish.

Abdomen shining rusty yellowish; the bristles quite weak.

Holotype—♀, Waterton, Alta., June 19, 1923, (E. H. Strickland), No. 2423 in the Canadian National Collection, Ottawa.

TACHINIDAE

Admontia Br. & Berg.

? *Hyperecteina* Schiner., Fauna Austriaca, I, 536, 1862.
Admontia Br. & Berg., Denkschr., Akad., Wien., LVI, 104, 1889.
Euadmontia Townsend., Proc. Biol. Soc. Wash. XXVIII, 19, 1915.
Xenadmontia Townsend, Proc. Biol. Soc. Wash., XXVIII, 22, 1915.

Without specimens of *Hyperecteina metopina* Schiner for comparison it is impossible to determine whether or not *Admontia* is a synonym. Schiner describes the arista of *metopina* as wholly thickened, a character not found in any of the species of *Admontia*. Stein separates the two genera by the amount of pollen on the abdomen, a character of no importance, and it seems likely that the two genera must be united. Townsend's two genera are, without doubt, synonyms of *Admontia* B. B., and *Urophylla* B. B. and *Urophylloides* B. B. are synonyms of *Hyperecteina* according to Stein who has used the older valid name *cinerea* Perrin for *metopina* Schiner. The only species described under the combination *Metopia cinerea* is that of Perrin.

For the present it seems advisable to use the generic name *Admontia* for our species although not in the sense of Coquillett. Smith, (Proc. Ent. Soc. Wash., XIV, 122, 1912) adopted the name *Hyperecteina* for the genus as understood by Coquillett and West (Journ. N. Y. Ent. Soc., XXXIII, 126-7, 1925) described several species, some of which do not belong to the genus in the strict sense. The genera *Phyllomyia* Desv. and *Hylotomomyia* Towns. are readily separated from *Admontia* and the former has already been discussed by me.

A key to the species of *Admontia* represented in the Canadian National Collection follows.

TABLE OF SPECIES**

1. From dorsal view less than the basal one-third of each of last three abdominal segments whitish pollinose medianly ..... 5.
   More than the basal half of each of the apical three abdominal segments grayish pollinose medianly ..... 2.
2. Palpi yellow ..... 3.
   Palpi black or brown ..... 4.
3. Antennae black; facial ridges bristled on lower third or less .. *retiniae* Coq.
   First two antennal segments and the arista mostly, reddish; facial ridges bristled on lower three-fourths ..... *rufochaeta* n. sp.
4. Facial ridges bristled on lowest third ..... *dubia* n. sp.
   Facial ridges bristled on lower half or more ..... *pollinosa* n. sp.
5. Upper pair of orbital bristles divergent ..... 6.
   All the orbitals proclinate; parafacials with a single row of hairs ..... *degeerioides* Coq.
6. Antennae broad, the third segment as wide as parafacials (Europe) ....**podamyia* B. B.

CAN. ENT. VOL. LIX. PLATE 5.

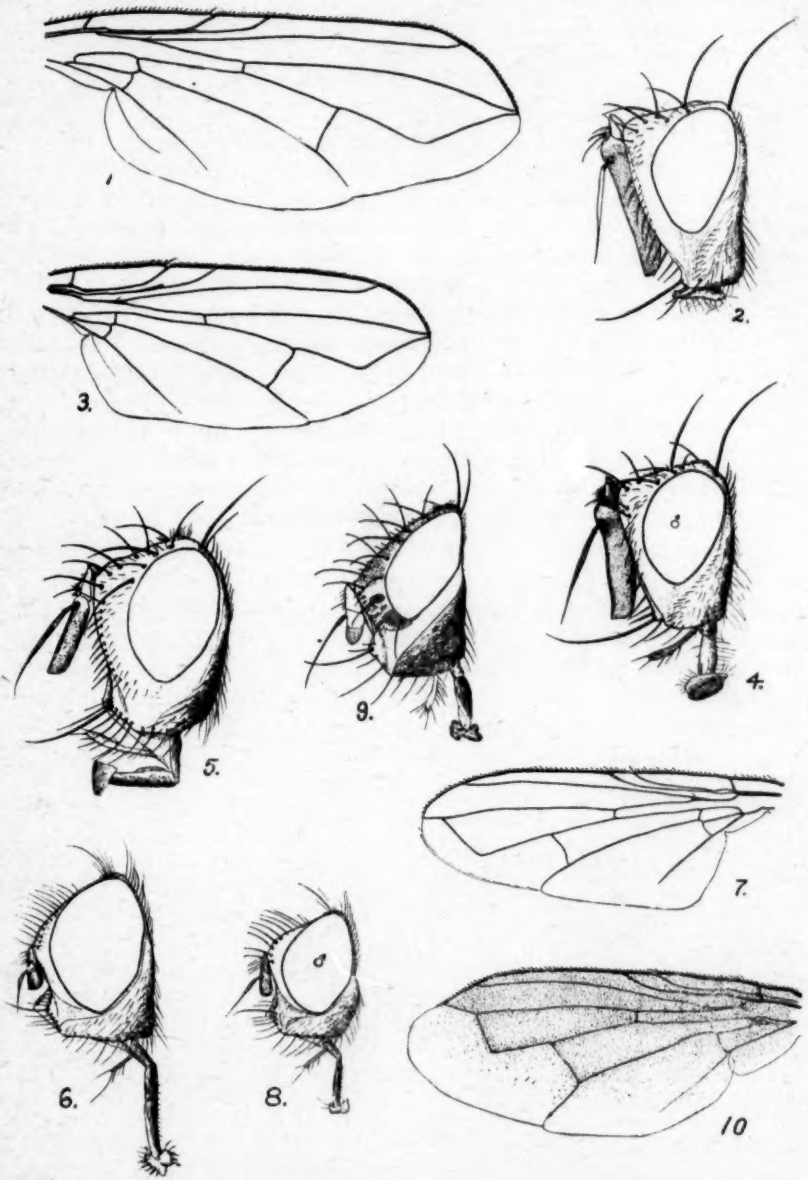

Fig. 1—Admontia rufochaeta n. sp.—Wing. Fig 2.—Admontia rufochaeta n. sp.—Head, lateral view. Fig. 3..—Admontia pollinosa n. sp.—Wing. Fig. 4.—Admontia pollinosa n. sp. —Head, lateral view. Fig. 5.—Uclesia zonata n. sp.—Head, lateral view. Fig. 6—Clistomorpha deceptor n. sp.—Head, lateral view. Fig. 7.—Clistomorpha deceptor n. sp.—Wing. Fig. 8.—Clistomorpha alberta n. sp.—Head, lateral view. Fig. 9.—Hesperophasia nigripennis n. sp.—Head, lateral view. Fig. 10|—Hesperophasia nigripennis n. sp.—Wing.

Antennae narrow, the third segment conspicuously narrower than parafacials ..... *pergandei* Coq.

*—This has been placed as a synonym of *amica* Meig. but does not agree with the description.
**—Species described by West are not included.

Admontia rufochaeta n. sp.

(Figs. 1, 2.)

Black; palpi, basal two antennal segments and the arista mostly, reddish. Length, 6 mm.

Male. Head thickly grayish white pollinose, frontal vitta reddish, at its middle wider than parafrontal opposite, widening above. Front at vertex as wide as either eye, widening anteriorly, almost horizontal. Cheeks two-fifths as wide as eye-height, the hair pallidly yellowish except an anterior row, that on the occiput also pale, elsewhere black. Parafacials with a single row of hairs, the ridges bristled on their lowest three-fourths. Labellae reddish. Third antennal segment very long and broad, somewhat narrowed apically; arista thickened on basal half, thence tapering, the penultimate segment one and a half as long as wide. Four pairs of frontals, the upper two reclinate; two pairs of orbitals.

Thorax grayish white pollinose, the four vittae distinct in some views; acrosticals and dorso-centrals 2-3; posthumeral and posterior sub-lateral absent; three strong pairs of marginal scutellars; sternopleurals 1-1.

Wings cinereous hyaline; apical cell rather narrowly open close to wing-tip; third vein with a single basal seta. Squamae white; halteres reddish.

Abdomen grayish pollinose, the broad apices of the segments rather brownish, the broad bases of the last three more densely pollinose and rather whitish. First and second segments each with a pair of marginals, second and third with a pair of discals; third and fourth with marginal row, the latter with a row of discals and a median pair on apical half.

Holotype—♂, Green Bay, Wis., May 7, 1915, (N. F. Howard). No. 2468 in the Canadian National Collection, Ottawa.

Admontia pollinosa n. sp.

(Figs. 3, 4.)

Black; palpi brownish; abdomen mostly pollinose. Length 5 to 6.5 mm.

Male. Head silvery pollinose, the front and upper part of the occiput less thickly so; frontal vitta brownish red, as wide as parafrontal; about six pairs of frontals, the upper reclinate; three pairs of orbitals, the upper pair divergent and weaker. Cheeks not half as wide as eye-height; with yellowish hair except anteriorly; hair of occiput yellowish below the neck; a single irregular row of hairs on parafacials, the ridges bristled on a little more than the lowest half. Antennae black or brown; arista thickened on basal half, the penultimate segment twice as long as wide. Front as wide as either eye.

Thorax cinereous pollinose, the mesonotum with brownish tinge, the vittae distinct in some views. Acrosticals and dorso-centrals 2-3; posthumeral absent; posterior sub-lateral weak or absent; three pairs of marginal scutellars and a very weak apical pair; three sternopleurals.

Legs black; femora more or less strongly gray pollinose; pulvilli small; middle tibiae with two strong antero-dorsal bristles.

Wings cinereous hyaline, the veins yellowish basally; apical cell narrowly open near the wing-tip; third vein with one or two basal setulae. Squamae white, halteres brownish red.

Abdomen grayish pollinose, the broad apices of the segment with more brownish pollen, much darker, almost shining towards the sides. First and second segments each with a pair of marginals, the second and third each with a pair of discals; third and fourth each with a row of marginals, the latter with bristles scattered on whole surface, the hair on the third segment coarse and sub-erect.

Female. Parafacial setulae longer, in two irregular rows; cheeks mostly black haired; two sternopleurals; dark abdominal fasciae broader and more shining, rather bronzed, the abdomen slightly tessellate.

Holotype—♂, Binscarth, Man., Aug. 9, 1923 (H. A. Robertson). No. 2470 in the Canadian National Collection, Ottawa.

Allotype—♀, Aweme, Man., Oct. 7, 1924, (N. Criddle).

Paratypes—♂, Dundurn, Sask., Aug. 19, 1926 and ♂, Waldeck, Sask., Sept. 4, 1926, (K. M. King); 5♀, Brookings and Big Stone City, South Dakota, (J. M. Aldrich). A ♂ and four of the ♀'s are in the United States National Museum.

Admontia dubia n. sp.

Black; palpi brownish; abdomen mostly pollinose. Length, 6 mm.

Female. Agrees with the preceding species and may prove to be only a variety. The facial ridges are bristled on only the lowest third and the apical cell is almost closed slightly farther from the wing-tip and the third vein bears three strong setulae basally. The chaetotaxy of the thorax is the same; there are two sternopleurals but the apicals are absent.

Holotype—♀, Holdfast, Sask., Aug. 7, 1925, (K. M. King), No. 2469 in the Canadian National Collection, Ottawa.

Clistomorpha Townsend

Can. Ent., XXIV, 79, 1892.
Hyalomyodes Townsend, Psyche, 429, 1893.

The genus *Clistomorpha* was established by Townsend for a species described under the name *hyalomoides* which proved to be a synonym of *Xysta didyma* Loew. This species has the apical cell very short petiolate while the species placed in *Hyalomyodes* has the cell long petiolate. This character cannot be considered of generic value and I have a species which is practically intermediate in this character. There is not the slightest difference in other respects and the coloration of *C. didyma* and *H. triangulifera* is almost identical, while there is no difference in the chaetotaxy.

The species belonging to the genus are separable as follows:

1. Petiole of apical cell more than one-third as long as the apical crossvein .. 2.
   Petiole of apical cell very short ..... *didyma* Lw.
2. Apical three abdominal segments densely silvery gray pollinose above, with a small, median basal bare spot on the second segment ..... *dorsalis* Coq.
   Apical three segments much more extensively black ..... 3.
3. Apical three segments with a shining black median vitta ..... 4.
   Apical three segments with the median vitta gray pollinose *triangulifera* Lw.

4. Oral margin very strongly produced, more prominent than antennal protuberance ..... *alberta* n. sp.
Oral margin gradually produced, hardly as prominent as antennal base .... *deceptor* n. sp.

Clistomorpha deceptor n. sp.

(Figs. 6, 7.)

Black; with grayish white pollen; palpi only about two-thirds normal size, brownish. Length, 4 mm.

Male. Sides of front and face silvery white, the pollen elsewhere grayish very thin on most of the occiput. Frontal vitta brownish red, obsolete for much of its length; frontals weak, confined to the lowest three-fifths of the front, the front extremely narrow for one-fifth of its length. Oral margin gradually produced, hardly as prominent as the antennal base. Palpi short, cylindrical with a long apical bristle. Antennae black; arista thickened on basal third.

Mesonotum thinly grayish pollinose; humeri, notopleura and a projection along the suture and a large prescutellar spot, whitish; pollen of pleura and scutellum thin, brownish, with grayish tinge in some lights. Acrosticals, 1-1; dorsocentrals, 2-3; sternopleurals 1-1; three pairs of marginal scutellars, the apical pair cruciate. Hair of thorax fairly long.

Legs black; anterior femora grayish brown pollinose posteriorly; pulvilli enlarged, yellow.

Wings cinereous hyaline, with yellowish tinge basally, the veins mostly brown. Petiole of apical cell one-third as long as apical crossvein; a weak bristle at base of third vein. Squamae whitish; halteres brown.

Abdomen shining black, the base of the second segment rather narrowly grayish yellow pollinose, the band broadly interrupted medianly and produced backwards a short distance; band on the third segment broad, produced backwards in the middle in the form of two large, moderately separated triangles which reach to the apex of the segment; pollinose band on fourth segment not clearly interrupted, about as wide as that on the third and produced only to the middle of the segment. Apical three segments with fine erect bristles dorsally.

Holotype— ♂, Hedley, B. C., July 21, 1923 (C. B. Garrett), No. 2457 in the Canadian National Collection, Ottawa.

Clistomorpha alberta n. sp.

(Fig. 8)

Black, with grayish pollen; palpi about two-thirds normal length, reddish brown. Length 5 mm.

Male. Head silvery gray pollinose, the occiput very thinly so above, the orbits silvery; hair black. Front very narrow for one-fifth its length, the brownish red vitta obsolete for some distance. Oral margin strongly produced, more prominent than the antennal base.

Thorax grayish white pollinose, thinly so in some lights, the humeri, notopleura, broad anterior border of the suture and a large presutural spot densely pollinose.

Legs brownish black; anterior femora thinly brownish pollinose posteriorly. Pulvilli elongate, yellow.

Wings cinereous hyaline, the veins brown, very pale yellowish basally; petiole of apical cell one-third as long as apical crossvein; a small bristle at base of third vein. Squamae white; halteres brown.

Abdomen shining black, the apical three segments extensively pollinose above. Broad base of the second segment medianly expanded as large broadly separated triangles which reach the posterior margin, gray pollinose; third segment pollinose except a narrow median vitta and narrow, broadly separated posterior triangles; fourth segment with an obscure linear median vitta and the apical one-third or less black. Apical three segments with fine bristles.

Holotype— ♂, Slave Lake, Alta., June 14, 1924 (O. Bryant), No. 2463 in the Canadian National Collection, Ottawa.

Uclesia Girschner

In his revision of the genera of Tachinidae having the ultimate section of the fifth vein long Aldrich (Trans. Am. Ent. Soc., LIII, 7-28, 1926) recorded this genus from America and described a species from Washington. There are three American species referable to this genus and I present a key to all the known forms. The Nearctic species show some differences in chaetotaxy, but agree perfectly in structure with the genotype. In all our species the dorso-centrals are arranged 2-3 and the posterior sublateral and posthumeral bristles are absent. These differences may be overlooked since the presence or absence of a bristle cannot be considered of generic value although often accompanying structural modifications and therefore serving as a ready means of separating genera. The following key will separate the species:

1. Dorsocentrals 2-3; posterior sub-lateral absent ..... 2.
   Dorsocentrals 3-3; posterior sublateral present (Europe) *fumipennis* Girsch.
2. Abdomen almost wholly yellowish gray or brownish yellow pollinose the apices of the segments narrowly darker ..... 3.
   Apical half of each segment shining blackish (B.C.) ..... *zonalis* n. sp.
3. Palpi and second antennal segment wholly bright reddish; penultimate aristal segment one third as long as following segment; median marginals on third segment as close to the hind margins as the other (N. D.) .... *varicornis* n. sp.
   Palpi brownish; penultimate aristal segment a little more than one-fourth as long as the following; median marginals on third segment well in front of hind margin (Washington) ..... *retracta* Adrich.

Uclesia zonalis n. sp.

(Fig. 5)

Black, with brownish gray pollen on mesonotum, elsewhere grayish. Length 6.5 mm.

Female. Pollen on frontal vitta rather golden; seven pairs of frontals, the upper pair divergent, the second lowest strong, the others rather weak; two strong and one weak orbital on either side. Face and occiput somewhat silvery; facial hairs rather weak, the row of bristles weak. Palpi and second antennal segment reddish brown; the apex of the latter and base of third segment reddish. Arista thickened on basal three-fourths, the penultimate segment less than one-fourth as long as the following.

Acrosticals 2-1; dorsocentrals 2-3; one sublateral; posthumeral absent; sternopleurals 2-1; three pairs of marginal scutellars, the apical pair cruciate; the discal and pre-apical bristles irregularly arranged, partly missing.

Legs black; femora thinly grayish pollinose.

Wings pale cinereous; the alula whitish; third vein bristled to small crossvein. Squamae white. Halteres brownish, the knob partly reddish.

Abdomen rather shining black, the basal half of each segment rather thickly yellowish gray pollinose. Posterior three-fifths of fourth segment with numerous bristles.

Holotype—♀, Oliver, B. C., May 10, 1923 (E. R. Buckell), No. 2455 in the Canadian National Collection, Ottawa.

Uclesia varicornis n. sp.

Black; yellowish gray pollinose; palpi, second antennal segment and base of third reddish. Length 7 mm.

Female. Frontal bristles as in *zonalis*. Pollen of head with brownish tinge above; frontal vitta reddish, the pollen grayish yellow. Hair of parafacials coarse the bristles towards the inner edges rather coarse. Arista thick on basal four-fifths thence tapering to the tip, the penultimate segment one-third as long as the following one.

In some lights the mesonotum shows four dark vittae and the pollen has a slight brownish tinge. Bristles as in *zonalis*.

Legs black; femora not pollinose.

Wings pale cinerous, the veins yellowish basally; alula mostly whitish; third vein bristled to small crossvein. Squamae white. Halteres with the knob and basal half reddish, the rest brown.

Abdomen almost wholly pollinose. Fourth segment bristled on apical three-fifths except in the middle immediately behind the basal row.

Holotype—♀, Beach, N. D., (C. N. Ainslie), No. 2456 in the Canadian National Collection, Ottawa.

Hesperophasia Townsend.

Journ. N. Y. Ent. Soc., XXIII, 220, 1915.
Hesperophasiopsis Townsend, J. N. Y. Ent. Soc., XXIII, 221, 1915.

The differences enumerated by Townsend for the separation of his two genera appear to be of little value and nothing is to be gained by recognizing them. The species before me may be separated as follows:

1. Cheeks about one-third as wide as eye-height; palpi blackish; ocellars weak 2.
   Cheeks almost or quite half as wide as eye-height; ocellars usually strong 3.
2. Middle of face in profile much more prominent than the parafacials at their middle ..... *aenescens* n. sp.
   Middle of face about level with parafacials; infra-squamal spinules absent ..... *setosa* Tns.
3. Antennae and palpi blackish ..... 5.
   Antennae and palpi reddish, the third antennal segment sometimes brownish on apical half ..... 4.
4. Squamae whitish with dark rim; antennae wholly reddish .. *californica* Tns.
   Squamae deep brown; third antennal segment brown on apical half ..... *nigripennis* n. sp.

5. Ocellars absent or extremely small; third antennal segment on its inner side inserted in the second as far as the base of the arista .... *pacifica* n. sp.
Ocellars long and fairly strong; third antennal segment not inserted deeply into the second ..... *aldrichi* n. sp.

Hesperophasia aldrichi n. sp.

Shining black; wings brownish black, the broad apex and posterior border cinereous hyaline, the discal and apical cells paler brown. Length, 5 to 6.25 mm.

Male. Sides of parafrontals on lower half, facial depression and an oblique band on the cheeks with silvery pollen; parafacials on upper two-thirds with rather silvery pollen but with very large, transverse shining black spots surrounding the bristles. Parafacials with a row of five bristles and a row of fine short hairs close to the orbits and another close to inner edge. Front half as wide as either eye, slightly widened above, moderately so below; about seven pairs of frontals and four of orbitals; frontal vitta with almost parallel sides, brownish black, narrower than parafrontal at middle. Cheeks about half as wide as eye-height; with bristly hairs behind. Palpi blackish. Antennae blackish; third segment about as long as second; arista strongly thickened basally, practically bare. Outer vertical bristles strong.

Acrosticals, 1-0; dorsocentrals 2-3; posterior sub-lateral absent; sternopleurals, 1-1; pteropleura with only two or three bristly hairs; three pairs of marginal scutellars, the second pair very strong, the apicals cruciate.

Legs black; pulvilli slightly enlarged; middle tibiae with three or four antero-dorsal bristles.

Wings with the petiole of the apical cell scarcely as long as the apical crossvein which is moderately oblique and more or less strongly curved, the bend of the fourth vein with a strong appendage; posterior crossvein slightly oblique, almost straight; third vein setulose above almost to the anterior crossvein. Squamae brownish, the disc paler. Halteres brown.

Fourth abdominal segment with a row of strong pre-apical bristles and a weak marginal row, the third with a pair of weak, appressed median marginals, the second and third each with a lateral. Hair appressed.

Female. Front hardly five-sixths as wide as eye, thinly pollinose on lower two-thirds, each bristle arising from a large bare spot, the parafacials more extensively pollinose, each bristle and hair arising from a bare spot.

Holotype—♂, Biggar, Sask., June 12, 1925 (N. J. Atkinson), No. 2460 in the Canadian National Collection, Ottawa.

Allotype—♀, Saskatoon, Sask., June 10, 1925, (K. M. King).

Paratypes—♂, Saskatoon, June 10, 1925; ♂, May 27, 1925, (K. M. King); ♀, Saskatoon, June 21, 1925, (N. J. Atkinson); ♀, Turtle Mts., N. D., near Bottineau, June 21, 1918 (J. M. Aldrich). A pair are deposited in the United States National Museum.

Dr. Aldrich determined specimens as new and forwarded the female from North Dakota. The species is most closely related to *californiensis* Townsend.

Hesperophasia pacifica n. sp.

This species is intermediate between typical forms of *Hesperophasia* and *Hesperophasiopsis*. The cheeks are somewhat less than half as wide as the

eye-height, the second abdominal segment has a pair of fairly strong, erect, median marginals and the ocellars are extremely weak or absent. Length, 4 to 5 mm.

Male. Wholly shining black; mesonotum very thinly brownish gray pollinose. Narrow frontal orbits on lowest third, two bands across the parafacials and the soft part of the head, silvery pollinose; middle of face with cinereous pollen. Front one-third as wide as either eye, strongly widening on anterior half, four secondary frontals on lowest third. Parafacials strongly convex in profile, the oral margin therefore prominent. Palpi and antennae black; third antennal segment noticeably shorter than the second, set into the second on the inner side as far as the base of the arista. Arista swollen on basal fourth.

Dorsocentrals 2-3 or 4; three pairs of strong marginal scutellars and a very weak, upturned apical pair, the hair on the disc appressed.

Legs black; pulvilli moderately elongate.

Wings pale smoky, the veins broadly clouded with pale yellowish brown which is especially noticeable in front. The apical crossvein may have a small appendage at the bend or the bend may be sharply rounded; third vein setulose to the anterior crossvein. Squamae whitish with brownish border. Knob of halteres deep black, the stem reddish.

Abdomen shining black, the hair appressed, rather short.

Holotype— ♂, Hood River, Oregon, May 10, 1927, (F. R. Cole) in United States National Museum.

Paratype— ♂, same data, No. 2500 in the Canadian National Collection, Ottawa.

Hesperophasia aenescens n. sp.

Black, with slight aeneous reflections; mesonotum with obscure grayish pollen. Length 6 mm.

Male. Upper half of occiput and front bare, lower half silvery grayish pollinose, the bristles on the lower half of the front each arising from a bare spot; face rather silvery pollinose, the cheeks with a broad oblique stripe. Each bristle on the parafacial arises from a large, oval bare spot while each hair arises from a roundish one; ten or eleven pairs of frontals; three pairs of strong and three hairlike orbitals; parafacials each with five or six bristles and two irregular rows of hairs. Front three-eighths as wide as eye, strongly widening on anterior half, the sides parallel on almost the upper half; ocellars weak; outer verticals strong. Cheeks about one-third as wide as eye-height, with black bristly hairs. Palpi brown. Antennae brownish, elongate, third segment missing. Middle of face prominent, at the middle projecting more beyond the facial ridges than width of parafacial opposite.

Acrosticals 3-(2 or 3?); dorsocentrals 3-4; posterior sublateral present; sternopleurals 1-1; three pairs of marginal scutellars, the second pair very long, the apicals cruciate. Infra-squamal spinules present.

Legs brownish black; pulvilli somewhat enlarged; middle tibiae with two strong and three or four quite short antero-dorsal bristles.

Wings cinereous hyaline, with luteous tinge anteriorly. Petiole of apical cell not as long as the apical crossvein which is oblique and gently bowed outwards; no appendage at bend of fourth vein; posterior crossvein oblique, gently

bowed outwards. Squamae whitish, with the upper lobe and border brownish. Halteres brown.

Third abdominal segment with a pair of erect marginals, fourth with a row of pre-apicals and slightly weaker apical row; second segment with a pair of poorly differentiated appressed median marginals, the hair along the middle of the dorsum longer, and appressed.

Type—♂, Sierra Madre, Chihuahua, Mexico, Sept. 4, (C. H. T. Townsend), in U. S. N. M.

This species is rather similar to *setosa* Townsend, but the very prominent middle of the face at once distinguishes it. *H. setosa* also lacks infra-squamal spinules.

Hesperophasia nigripennis n. sp.

(Figs. 9, 10)

Black; antennae and palpi reddish; mesonotum very thinly brownish gray pollinose. Length, 5 mm.

Female. Head shining black, the face and oblique stripe on the cheeks with silvery pollen, the front with obscure brownish yellow pollen, each bristle and hair arising from a conspicuous bare spot. Front slightly wider than either eye; seven pairs of frontals, the lowest situated below the base of the antennae, the upper pair reclinate; ocellars weak. Hair of head wholly black; middle of face slightly more prominent than parafacials in profile; apical half of third antennal segment brownish.

Acrosticals 1-3; dorsocentrals 2-3; posterior sublateral and posthumeral absent; sternopleurals 1-1; three pairs of marginal scutellars; two or three bristly hairs on the pteropleura; infra-squamal spinules present.

Legs black; middle tibiae with one strong and two or three weak anterodorsal bristles.

Wings (fig. 10) blackish brown, becoming brownish gray behind and apically. Squamae brown. Halteres brown except basally.

Abdomen shining black; third segment with six weak, appressed marginals, the fourth with two irregular rows of bristly hairs apically. Hair appressed.

Holotype—♀, Claremont, Calif., (C. F. Baker), in United States National Museum. The specimen is from the Aldrich Collection.

This species is close to *californica* Townsend, the genotype of *Hesperophasiopsis*, but it has wholly brown squamae, partly brown antennae and otherwise differs from Townsend's description.

BEETLES OF THE GENUS DONACIA FROM THE PLEISTOCENE OF VANCOUVER ISLAND, BRITISH COLUMBIA:

BY T. D. A. COCKERELL,
University of Colorado.

I am indebted to the Rev. Robert Connell for some very interesting Coleopterous remains in black lignite from the south end of Cordova Bay, Victoria. The deposit is overlain by about 180 feet of clay, sand, and gravel, the Cordova sands and gravels and Maywood clays constituting the Puyallup interglacial deposits, with Vashon drift above. Of the Puyallup deposits the Maywood clays are the

older, and in them is the lignite bed with marine shells in the overlying clay and finely stratified whitish clay underlying it. The lignite contains pieces of wood, seeds, and other plant remains.

The beetles include two brilliantly metallic forms of the genus *Donacia* (Chrysomelidae), found today on plants which grow in ponds and ditches, and also a few small black elytra which I have not attempted to determine.

One of the two species of *Donacia* corresponds exactly, so far as the elytra show, with *D. pompatica* Scudder, from the interglacial clays of Scarboro, Ontario; I can only refer it to this species, being unable to detect any difference. The other is evidently allied to the Scarboro species, *D. stiria* Scudder, but differs by being smooth (without transverse rugulation) between the rows of punctures, the metallic green color (but this varies in living species), and the rather larger size. As we know *D. stiria* only from the apical part of an elytron, and do not know whether the hind femora are dentate, it seems best to follow the apparent indications and regard our species as distinct. It may be described as follows:

Donacia connelli n. sp.

Metallic green, quite brilliant; elytra 5 mm. long and a little over 1.5 mm. wide, with rows of small elongate punctures; surface between the rows smooth; the rows are about 160 to 190 microns apart and number seven or eight; there is a fine groove along the sutural margin; the punctures are mostly separated by a distance equal to about 1.5 to twice the length of a puncture; tips of elytra rounded. A detached piece, apparently from the pleural region, is densely rugoso-punctate. The end of a hind femur is preserved, and shows a large broad tooth, prominent but not spiniform.

In addition to the two Scarboro species, three other fossil *Donacia* have been recorded from North America. *D. elongatula* Scudder, from the Pleistocene of Hadley, Mass., has the elytra about 7.6 mm. long, shining piceous. *D. stirioides* Wickham, from the Pleistocene (Sangamon Peat) of Illinois, is only a fragment of an elytron, but it is relatively coarsely transversely rugose; it is metallic blue or purple. *D. primaeva* Wickham, from the Miocene of Florissant, Colorado, has the elytra 6.3 mm. long, and the femora are not dentate.

It is a remarkable fact in the distribution of modern *Donacia*, that the numerous species inhabit the eastern States, and while some (*D. pusilla* Say, *D. femoralis* Kirby, *D. emarginata* Kirby) extend right across to Vancouver Island no peculiar forms seem to have developed in the Pacific Coast region. If we find *D. pompatica* in Ontario and at Victoria in Pleistocene times, this should cause no surprise.

The type specimen, of *D. connelli* was covered with gum arabic to prevent disintegration. This spoils the fine metallic color, but leaves the form and sculpture visible.

Mailed Saturday, December 31st, 1927.

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